

**WHAT IS CLAIMED IS:**

1. A method of ink level determination for multiple ink chambers, comprising the steps of:
  - determining a first estimated amount of a first ink in a first ink chamber;
  - determining a second estimated amount of a second ink in a second ink  
5 chamber;
  - measuring an amount of said second ink contained in said second ink chamber;
  - determining an actual ink loss for said second ink chamber by finding a difference between said amount of said second ink measured in said second ink  
10 chamber and said second estimated amount of said second ink in said second ink chamber; and
  - modifying said first estimated amount of said first ink in said first ink chamber using said actual ink loss for said second ink chamber to form a compensated first ink amount.
2. The method of claim 1, said first ink being one of a pigment ink and a dye-based ink, and said second ink being one of said pigment ink and said dye-based ink.
3. The method of claim 1, said first ink being one of cyan ink, a magenta ink, a yellow ink and a black ink, and said second ink being another of said cyan ink, said magenta ink, said yellow ink and said black ink.
4. The method of claim 1, further comprising the steps of:
  - establishing a predicted first ink loss rate associated with said first ink contained in said first ink chamber using empirical data;
  - establishing a predicted second ink loss rate associated with said second ink in  
5 said second ink chamber using empirical data;
  - forming a first ratio of said predicted first ink loss rate associated with said first ink in said first chamber and said predicted second ink loss rate associated with said second ink in said second chamber;

10 multiplying said actual ink loss for said second ink chamber by said first ratio  
to form a first correction value; and  
modifying said first estimated amount of said first ink in said first ink chamber  
with said first correction value to form said compensated first ink amount.

5. The method of claim 4, wherein the step of modifying said first estimated amount of said first ink in said first ink chamber is performed by subtracting said first correction value from said first estimated amount of said first ink in said first ink chamber.

6. The method of claim 4, wherein said first ratio is assumed to be a fixed value.

7. The method of claim 1, further comprising the steps of:  
determining a third estimated amount of a third ink in a third ink chamber; and  
modifying said third estimated amount of said third ink in said third ink  
chamber using said actual ink loss for said second ink chamber to form a compensated  
5 third ink amount.

8. The method of claim 7, further comprising the steps of:  
establishing a predicted third ink loss rate associated with said third ink in said  
third ink chamber;  
establishing a predicted second ink loss rate associated with said second ink in  
5 said second ink chamber;  
forming a second ratio of said predicted third ink loss rate associated with said  
third ink in said third ink chamber and said predicted second ink loss rate associated  
with said second ink in said second chamber;  
multiplying said actual ink loss for said second ink chamber by said second  
10 ratio to form a second correction value; and  
modifying said third estimated amount of said third ink in said third ink  
chamber with said second correction value to form said compensated third ink  
amount.

9. The method of claim 8, wherein the step of modifying said third estimated amount of said third ink in said third ink chamber is performed by subtracting said second correction value from said third estimated amount of said third ink in said third ink chamber.

10. The method of claim 1, wherein said multiple ink chambers are formed in a multi-chambered ink reservoir.

11. An ink jet printer, comprising:  
a printhead carrier system including a carrier;  
at least a first ink chamber and a second ink chamber;  
a printhead mounted to said carrier, said printhead having a plurality of  
5 nozzles coupled in fluidic communication with said first ink chamber and said second ink chamber;  
a plurality of actuators, each actuator being associated with a respective nozzle of said plurality of nozzles;  
a sensor configured to detect an ink level in said second ink chamber;  
10 and a controller electrically connected to said plurality of actuators and to said sensor, said controller configured to perform the steps of:  
determining a first estimated amount of a first ink in said first ink chamber;  
determining a second estimated amount of a second ink in said second ink chamber;  
15 measuring an amount of said second ink contained in said second ink chamber;  
determining an actual ink loss for said second ink chamber by finding a difference between said amount of said second ink measured in said second ink chamber and said second estimated amount of said second ink in said second ink  
20 chamber; and  
modifying said first estimated amount of said first ink in said first ink chamber using said actual ink loss for said second ink chamber to form a compensated first ink amount.

12. The ink jet printer of claim 11, said first ink being one of a pigment ink and a dye-based ink, and said second ink being one of said pigment ink and said dye-based ink.

13. The ink jet printer of claim 11, said first ink being one of cyan ink, a magenta ink, a yellow ink and a black ink, and said second ink being another of said cyan ink, said magenta ink, said yellow ink and said black ink.

14. The ink jet printer of claim 11, said controller configured to perform the steps of:

identifying a predicted first ink loss rate associated with said first ink contained in said first ink chamber using empirical data;

5 identifying a predicted second ink loss rate associated with said second ink in said second ink chamber using empirical data;

forming a first ratio of said predicted first ink loss rate associated with said first ink in said first chamber and said predicted second ink loss rate associated with said second ink in said second chamber;

10 multiplying said actual ink loss for said second ink chamber by said first ratio to form a first correction value; and

modifying said first estimated amount of said first ink in said first ink chamber with said first correction value to form said compensated first ink amount.

15. The ink jet printer of claim 14, wherein the step of modifying said first estimated amount of said first ink in said first ink chamber is performed by subtracting said first correction value from said first estimated amount of said first ink in said first ink chamber.

16. The ink jet printer of claim 14, wherein said first ratio is assumed to be a fixed value.

17. The ink jet printer of claim 11, said controller configured to perform the steps of:

determining a third estimated amount of a third ink in a third ink chamber; and

modifying said third estimated amount of said third ink in said third ink  
5 chamber using said actual ink loss for said second ink chamber to form a compensated  
third ink amount.

18. The ink jet printer of claim 17, said controller configured to perform the  
steps of:

identifying a predicted third ink loss rate associated with said third ink in said  
third ink chamber;

5 identifying a predicted second ink loss rate associated with said second ink in  
said second ink chamber;

forming a second ratio of said predicted third ink loss rate associated with said  
third ink in said third ink chamber and said predicted second ink loss rate associated  
with said second ink in said second chamber;

10 multiplying said actual ink loss for said second ink chamber by said second  
ratio to form a second correction value; and

modifying said third estimated amount of said third ink in said third ink  
chamber with said second correction value to form said compensated third ink  
amount.

19. The ink jet printer of claim 18, wherein the step of modifying said third  
estimated amount of said third ink in said third ink chamber is performed by  
subtracting said second correction value from said third estimated amount of said  
third ink in said third ink chamber.

20. The ink jet printer of claim 11, wherein said first ink chamber and said  
second ink chamber are formed in a multi-chambered ink reservoir.